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ABSTRACT

This paper: (1) demonstrates how computers can be a powerful and vital tool when combined with Howard Gardner's theory of Multiple Intelligences to enable educators to reach students with a variety of learning styles; and (2) provides a model of using one form of technology, computers, in connection with the intelligences to help students learn to the best of their ability and become successful life-long learners. It is argued that today's education addresses only the first three intelligences--Linguistic, Logical-Mathematical, and Intrapersonal--and that many of today's students are dominant in the other four--Spatial, Musical, Bodily-Kinesthetic, and Interpersonal. It is noted that research into multiple intelligences is beginning to show that students labeled as academic underachievers may be dominant in a cognitive learning style that is opposed to the prevailing teaching methods. It is suggested that programed instruction and the use of microcomputers in the classroom can not only provide an environment more amenable to learning, but can also address the individual intelligences of each student. Brief discussions of each of the seven multiple intelligences include examples of appropriate computer courseware. One computer program, Snooper Troops, is discussed in detail as an example of the ways in which computers can enhance student learning. It is concluded that the combination of computers and attention to multiple intelligences will result in a more successful classroom learning environment and the fostering of creative thinking skills. Educators are encouraged to examine curriculum and class material with the aim of implementing Gardner's theory in existing classroom practices. An attached information packet includes: a list of software appropriate for each of the multiple intelligences; a list of information sources; and a sample unit using Snooper Troops. (10 references) (DB)

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# LEARNING HOW TO LEARN : TECHNOLOGY, THE SEVEN MULTIPLE INTELLIGENCES AND LEARNING

Russell R. Davis

Many of today's students are no longer being adequately served by the educational system. Recent statistics from the California Department of Education, for example, reveal that :

1/3 of the state's children do not graduate from high school, and of 30 high school sophomores :

4 will speak no English ;

8 are two or more years below grade level in both reading and math ;

1 is a victim of child abuse;

3 will be teen parents ;

3 will grow up in public housing;

8 will be on public assistance;

7 will not graduate;

7 will not be employable.

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If you add up the numbers, you will notice that some students fall into more than one catagory.

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Similar statistics could be compiled for any other state. Clearly, traditional teaching methods do not address the needs of many students in American classrooms. Therefore, educators must develop new approaches that will teach to the strengths of each and every child. Although many methods have been tried, the problem still persists. As grim as this situation is, there now may be a solution . In his 1983 book ***Frames of Mind : The Theory of Multiple Intelligences,*** Howard Gardner , professor of education at Harvard University, proposed the theory that there are " Seven Multiple Intelligences" by which people acquire knowledge . He believes that each of us has components of all of the Multiple Intelligences, and that we are dominant in at least one. There are now a number of California educators on all levels who are attending workshops and classes in Gardner's theory of Multiple Intelligences and then returning to their classroom and developing activities to put the theory into practice.

Sue Teele, Director of Education Extension at the University of California in Riverside , and Dr. David Thornburg of the Thornburg Center for Personal Development in Palo Alto, are co-founders and sponsors of the Renaissance Project, a research project aimed at helping students improve their potential to learn by addressing all seven of the intelligences. According to Teele, the project also aims to "...incorporate authentic assessment with Gardner's paradigm, thus designing assessment measures that model students dominant intelligences."

The Renaissance Project focuses on the teaching process, not on any particular subject. The strategies it espouses are valuable to all learners from elementary to post-college and even in industrial training. The project also trains teachers to recognize their dominant intelligence(s) and the dominant intelligence of their students, as well as to help students develop all their intelligences.

The co-founders of the Renaissance Project believe the following steps are necessary for implementation of this project :

There must be an evaluation of the students before teachers attempt to change the educational environment. Teachers must be trained in the theory of Multiple Intelligences in a workshop setting, so that they are able to go back to the classroom and effect change. In Fact, One of the goals of the workshops is to have participants develop lesson plans that can be shared and used in the classroom. The project must continually support teachers as they develop new class material based upon the Multiple Intelligences. There must be continual support and evaluation of the implementation of this process. There must be constant monitoring of student progress . The process must be refined over its three year life as it is implemented in selected schools throughout California. There must be constant documentation of the implementation of this process and the availability of lessons produced.

The Theory of Multiple Intelligences does not require that all current classroom practices be abandoned. Rather, educators can build upon much of what they are already doing. All educators can easily develop activities to emphasize all of the intelligences. The major change in emphasis is in evaluating the knowledge that students have acquired, and allowing students a greater chance of success by providing them with the opportunity to have input into the way they are tested.

First , we should consider three areas that Thornburg discussed in his presentation "Tools for the Empowered Teacher" at the conference "Strategies for Successful Use of Technology-Based Instruction" at the University of California, Riverside on October 1, 1988.

The first area is SELF-ESTEEM : Students with poor self-esteem have problems in class. Teachers help students develop self-esteem by praising them for their successes and providing

them with role models of people who failed and then succeeded, such as Abraham Lincoln.

The second area is THINKING SKILLS : Educators must help students develop skills needed to succeed in today's world such as flexibility and problem solving.

The third area is TECHNOLOGY : The use of various technologies, such as computers, interactive video, and telecommunications, among others, will help to achieve the above two goals.

Although Teele and Thornburg feel that the project is not dependent upon the use of technology, but they believe that technology can be very useful in teaching to the "whole child." This paper demonstrates how computers can be a powerful and vital tool when combined with Gardner's Seven Multiple Intelligences to enable educators to reach students with a variety of learning styles, and provides a model of of using one form of technology, computers, in connection with the Intelligences to help students learn to the best of their ability, thus empowering them to become successful life-long learners.

## THE SEVEN MULTIPLE INTELLIGENCES AND TECHNOLOGY

Each of the Multiple Intelligences can be trained and supported by the use of computers. There are many computer programs that do this. Some of these programs are listed in the *Selected Resources* section of your packet.

**LINGUISTIC** : In this area, computers and word processing programs can help to teach language and organizing, writing, editing and rewriting skills. These skills can then be transferred to other subject areas, such as social studies and science. The Children's Writing and Publishing Center , and Monsters and Make Believe are programs that can be used to teach word processing and add the creative element of graphics.

**LOGICAL - MATHEMATICAL** : Computer programs such as King's Rule and Safari Search can help students develop logic skills. Drill and practice programs can also give students experience in various areas of mathematics, while others, such as Math Blaster, The Factory and Super Factory provide practice in critical thinking skills as well. The Solutions Unlimited series introduces the student to a four step problem solving guide and sets up a situation in which the Student must use the four step guide to solve a problem, such as how to win in the White Water Canoe Race. Data bases can also be used to help students organize and explore information in almost any subject area.

**INTRAPERSONAL** : The computer can help students develop individual skills, allowing for differences in learning styles and abilities. It can also be used for drill and practice and to provide students with extra help in such areas as science, reading, social studies and even in critical thinking skills. Many social studies programs provide valuable simulation experiences. Oregon Trail, Decisions, Decisions, and the Carmen SanDiego Series can help teach research skills in connection with regular class and library activities. The Science Tool Kit series and the experiment units in Voyage of the Mimi allow students to develop analytical skills while working at their own pace.

**SPATIAL** : Math programs such as Geometric , and King's Rule can help students visualize mathematical concepts. Still others, such as The Factory and Super Factory, help students

develop critical thinking skills. Graphics programs develop spatial perceptions , and also spark creativity by allowing students to create designs of their own. Games such as Tetris and Weltrus can reinforce skills in all of the Multiple Intelligences, by combining many different types of activities at once. The increasing availability and use of laser disk technology can help to develop spatial skills in all subject areas.

Furthermore, working with such programs can help improve student eye / hand coordination, psychomotor speed , visual motor dexterity and visual recall, by making the student take an active, and at times, physical part in the learning process.

**MUSICAL** : Music should be incorporated into all classes where appropriate. With computers, graphics and music can be combined to enhance moods. Many programs are available which help people write music, or have simulated music as part of the presentation. The new Oregon Trail, for example, introduces each segment of the program with a piece of music from the 1800's. The use of HyperCard , on the Macintosh computer, will also aid in this area.

**BODILY - KINESTHETIC** : The user of any computer program must become actively and physically involved in the learning process. Activities that involve students physically can help them become more proficient in any subject area, and develop good hand-eye coordination. Through contact with the keyboard or through devices such as a mouse or a joystick, students can become active participants in learning . For example, the new Lago Logo combines computer skills with physical skills. Students use the plastic Lego bricks to build a car or some other object that is then operated through a program that they write using the Logo . The Science Tool Kit and Exploring Science materials engage the Bodily-Kinesthetic Intelligence by having students become actively involved in inputting data. These skills can be applied to almost any subject area.

**INTERPERSONAL** ( working with others) : The computer can encourage cooperative learning. In any subject area - such as social studies, English, science or math - students can develop interactive social skills by working through various programs in small groups of two to four. In working on a particular activity or problem, students are also practicing social skills that will allow them to get along with others later in life. Programs such as the Factory , allow create a product and challenge others to duplicate it.

In my seventh grade Critical Thinking Skills classes students work at the computer in small groups to solve a particular problem, and engage in a variety of activities which focus upon each of the intelligences. Today I would like to talk about one program, **Snooper troops**, a detective game-like simulation from Tom Snyder, is an excellent example of ways in which computers can enhanse student learning.

## SNOOPER TROOPS - AN EXAMPLE

In Snooper Troops , players have to get clues and identify the guilty suspect out of a pool of eight.Throughout this program, we explore three areas involving higher level thinking skills, as explained in the Corona-Norco School District guidebook to the Project Critical Program , developed to teach critical thinking skills:

1) Identifying and clarifying the problem.

2) Judging information related to the problem.

3) Solving problems / drawing conclusions.

Throughout the Snooper Troops unit all of the Seven Multiple Intelligences can be utilized at various times. On day one I introduce the unit with a series of overheads. The students have to take

notes, since not all special key commands are available on the screen. I also provide them with background information concerning the case of the Granite Point Ghost and characters who appear in the mystery simulation.

On day two students begin using Snooper Troops. But at this point the goal is to fill in the map, Of the town of Granite Point, not to try and solve the case.

On day three students actually begin to work with the Snooper Troops Program . They must take notes and fill out their Snoop Notes worksheets with their clues and other pertinent information about each suspect. They may also continue working on the map.

With programs like Snooper Troops , students engage in various activities which focus upon each of the intelligences. Let us consider how the Seven Multiple Intelligences are utilized throughout this unit :

The **Linguistic Intelligence** is involved from the beginning. Students have to take notes during the introduction and throughout the entire unit which lasts about two weeks. They must exercise aural and writing skills, and remember who is connected to what facts.

The **Logical-Mathematical Intelligence** is demonstrated in this unit by the need to explore patterns, categories and relationships, and to use abstract forms of logical thinking. Students must be able to reason situations out logically and clearly. They must ask **who, what, where, why** and **how** and feel comfortable using a computer to help them get needed information to eliminate suspects that are not guilty as well as to identify the guilty party.

The **Intrapersonal Intelligence** (Self) is required in group work. Students must have an awareness of inner feelings and react with strong opinions when controversial topics are

discussed. They must also be comfortable with themselves and and have enough self confidence to become positive members of the group they are working with.

The **Spatial Intelligence** is involved since the students must be able to think in images and pictures in order to develop the story in their mind. They must be able to read maps and diagrams and enjoy solving puzzles. They must also have a sense of direction to get around the map on the screen and transfer the information thus gained from the screne to their papers. Since the computer map only shows a small part of Granite Point at any one time.

The **Musical Intelligence** can have great potential in education by encouraging students to pay attention to sounds in the environment. To compensate for the lack of music in the Snooper Troops or other programs teachers can introduce it in other ways. Since Snooper Troops is a mystery, it could be introduced by playing theme songs from mystery shows, such as the theme from "Mystery"," Murder She Wrote", "Perry Mason", "Alfred Hitchcook" or the "Pink Panther".

Educators can also use the radio or tapes to provide music on a regular basis in class. As part of the assignment, groups could create their own mystery songs or write and recite mystery poetry. Each semester a few of my students have attempted to summarize this program by writing a poem about their conclusions.

The **Bodily-Kinesthetic Intelligence** involves processing knowledge through movement and Snoper Troops is ideal for the Bodily-Kinesthetic student, who needs to be allowed the opportunity for movement that channels this physical activity into direct positive learning. When students are working on this program, much movement is involved since they must take notes and share information with other groups. When they are working on their projects at the end I allow them to work in groups of up to four.

The **Interpersonal Intelligence** ( working with others) becomes very involved in this unit. Students must work together with their partner(s) to decide who does what task, such as working on the computer or recording information on paper. Each group must be able to work with other groups to share information. Students must relate to and cooperate with others and empathize with them. They must also socialize, organize, communicate and manipulate to the best advantage.

How is such an activity graded ? I have students turn in their information sheets, notes and maps. But then teachers can go a bit further. Thornburg suggests having a **"Celebration of Knowledge'.** Since the students are familiar with their work, teachers can offer them a choice on how to present their findings rather than taking a traditional teacher created test . This could take the form of a diorama, a drawing, a report or story, a play, a video, a poem... the list of possible activities is limited only by each student's imagination.

In many schools across the country, students are already using the Macintosh and HyperCard to create entire illustrated papers and projects in place of the traditional typed report or term paper. Graphics, pictures and even sound can also be included as well as text, all of which can be played back and referred to in any order. A Macintosh is not needed to implement the Multiple Intelligences. What is needed is a willingness on the part of teachers to allow students the freedom to exercise their creativity in a manner comfortable for them. For the 1990-91 school year I have devised a number of activities for my Critical Thinking Skills class in which each student group decides the way in which they present information they have learned.

When students have finished using **Snooper Troops**, or any other computer program used to teach to the Multiple Intelligences, they should have a greater understanding of how to recognize a problem and how to formulate a solution to the problem. They should also be able to evaluate available information and use that information to reach the desired solution. Both the Multiple

Intelligences and computers should help train students to become creative thinkers and problem solvers - that is , life long learners.

Today the world has become too large and complicated to teach students how to memorize facts. At the same time, through the use of telecommunications, it has become very small. Educators need to teach students how to think, and better yet how to think about ways of finding information, not just repeating what they have been told . With the Seven Multiple Intelligences, technology, and especially computers, can be used across the curriculum to help students develop skills in areas of learning that will serve them well later in life.

When you return to your classroom have, a "**Celebration of Knowledge**" rather than a failure of testing. Start to develop activities that will give your students a choice in how they will celebrate the knowledge that they have learned. Make your students active participants in the learning process. Allow them to use their imagination constructively to become successful in a learning environment that is inviting rather than threatening, challenging rather than boring, and rewarding rather than punishing. Make learning meaningful, while at the same time allowing for student creativity and, even fun. Let us all empower our students to become life-long learners by giving them the ability to use all forms of technology and all of their intelligences in order to realize their full potential.

## BIBLIOGRAPHY


1). Armstrong, Thomas. *In Their Own Way*. New York : St. Martin's Press, 1987

2). Davis, Russell. Summary of paper of presentation at the conference "Strategies for Successful Use of Technology-Based Instruction." University of California, Riverside. Oct. 1, 1988.

3). Davis, Russell. "Critical Thinking Skills-Project Critical". Project paper for the workshop "Maximize : Teach to the Whole Mind", University of California, Riverside. October 8, 1989.

4). Gardner, Howard. *Frames of Mind : The Theory of Multiple Intelligences*. New York : Basic Books, 1983.

5). *Project Critical Curriculum Guide*. Corona-Norco Unified School District, Corona-Norco, California : 1983.

6). *The Renaissance of Learning : Institute for the Study of the Theory of Multiple Intelligences*. Summer Institute, July 30-Aug. 3, 1990. Riverside, California.

7). Teele, Sue. *Technology and Assessment Strategies Applicable to the Multiple Intelligences*.. Riverside, California : University of California Extension, 1990.

8). Thornburg, David. Keynote Address, Conference : "Strategies for Successful Use of Technology-Based Instruction". University of California, Riverside. Oct. 1, 1988.

9). Thornburg, David. *The Role of Technology in Teaching to the Whole Mind : Multiple Intelligences in the Classroom.* Los Altos, California : Starsong Publishers, 1989.

10). Thornburg, David. Workshop. " Maximize Learning : Teach to the Whole Mind". University of California, Riverside. Oct. 8, 1989.

# LEARNING HOW TO LEARN THE MULTIPLE INTELLIGENCES AND TECHNOLOGY

## ABSTRACT

BY RUSSELL R. DAVIS

Current research indicates that many students are entering school today unprepared to succeed in conventional classroom settings. Traditional teaching methods do not seem to address the needs of these students.

In 1983 Howard Gardner of Harvard University published *Frames of Mind : The Theory of Multiple Intelligences* in which he put forth the theory that each individual has components of "Seven Multiple Intelligences" : Linguistic, Logical-Mathematical, Intrapersonal, Spatial, Musical, Bodily-Kinesthetic, and Interpersonal. Much of today's education addresses only the first three Intelligences -the ones in which most educators seem to be dominant. The problem lies in the fact mat many of today's students are dominant the other four Intelligences, which public education does not often address. Research into the Multiple Intelligences is beginning to show that many students, labeled as underachievers, are often dominant in a learning style that is opposed to the prevailing teaching style.

Technology, especially computers, can address all seven Intelligences, particularly those not usually addressed by current teaching practices. Since computers can help students to utilize their dominant learning styles, all students can improve their academic performance and be more successful in school.

Educators are encouraged to examine curriculum and class material with the aim of implementing Gardner's theory in existing classroom practices. They will begin to evaluate themselves, their teaching styles, and the learning styles of their students , in order to develop resources to reach students having difficulty acheiving success in a conventional classroom setting.

As I discuss each intelligence I will be suggesting computer programs that address each of the Intelligences, keeping in mind that many programs help to address more than one Intelligence. Educators will come away with a greater understanding of how their students process information and how technology, especially computers, can help all of us better address our students learning styles.

# LEARNING HOW TO LEARN

# TECHNOLOGY, THE

# SEVEN MULTIPLE INTELLIGENCES

# AND LEARNING

## INFORMATION PACKET

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SPRING CUE CONFERENCE
PALM SPRINGS

SATURDAY MAY 11, 1991

# SELECTED RESOURCES

**For The Multiple Intelligences**

BY RUSSELL R. DAVIS

## I. SOFTWARE (1)

### LINGUISTIC :

MULTI-SCRIBE ---------- Scholastic
CHILDREN'S WRITING AND PUBLISHING CENTER - The Learning Company
MONSTERS & MAKE BELIEVE ---------- Pellican
Any word processing program

### LOGICAL-MATHEMATICAL :

GEOMETRIC----------Broderbund
KING'S RULE -- ----------Sunburst
SAFARI SEARCH ---------- Sunburst
MATH BLASTER ---------- Davidson
FACTORY & SUPER FACTORY ---------- Sunburst
SOLUTIONS UNLIMITED ---------- Decision Development Corporation

### INTRAPERSONAL :

NEW OREGON TRAIL ---------- MECC
DECISIONS, DECISIONS ----------Tom Snyder
SCIENCE TOOL KIT ---------- Broderbund
VOYAGE OF THE MIMI ---------- Sunburst

### SPATIAL :

KING'S RULE ---------- Sunburst
THE FACTORY ---------- Sunburst
SUPER FACTORY ----------Sunburst
TETRIS & WELTRUS ----------Sphere Inc.

## SPATIAL :

KING'S RULE ---------- Sunburst
THE FACTORY ---------- Sunburst
SUPER FACTORY ---------- Sunburst
TETRIS & WELTRUS ----------Sphere Inc.
MUPPET SLATE----------Sunburst
PUZZLE TANKS----------Sunburst

## MUSICAL :

OREGON TRAIL ---------- MECC
HYPER CARD---------- Apple program for the MAC
THE NOTABLE PHANTON K-10----------National School Products
SONGWRITER 1-8----------National School Products
JAM SESSION 5-ADULT----------National School Products
Any program that includes sound or music as an integral part of the presentation.

## BODILY - KINESTHETIC

LAGO LOGO
SCIENCE TOOL KIT ----------Broderbund
EXPLORING SCIENCE ----------Sunburst
VOYAGE OF THE MIMI ----------Sunburst
EXPLORING SCIENCE : TEMPERATURE----------Sunburst
MUPPET LEARNING KEYS----------Sunburst

## INTERPERSONAL :

SNOOPER TROOPS ----------Ton Snyder
CARMEN SANDIEGO SERIES----------Broderbund
**Any other program that two or more can work on**

# II. INFORMATION SOURCES

## 1). THE RENAISSANCE PROJECT

Sue Teele, Co-Director
Director of Extension
University of California Riverside 92521

David Thornburg, Co-Director
Director of Thornburg Center for Professional Development
Mountain View, Califonia 94023-1317

2). Carla Eardley, Co-Director
Language Consulting Services
250 Ruth Ave.
Venice, California 90291

3). Sunburst Curriculum Planner
Sunburst Communications Inc.
39 Washington Ave.
Pleasantville, N. Y. 10570

(1) The above list of software is only a limited list of programs that can be used to teach to the various Intelligences. Also, remember that many programs address more than one Intelligence at the same time. The Sunburst Curriculum Planner is a great source of all Sunburst programs with a two page review of each program.

CRITICAL THINKING SKILLS ROOM 101 MR. DAVIS

# SNOOPER TROOPS

NAME _____

NAME _____

PERIOD _____ DATE _____

*DIRECTIONS :* ***This unit will last two weeks.***
You and your partner will go through the program and do the following activities required of all groups.
1). Take notes while I introduce the program.
2). Fill in your Snooper Troops packet as you go along.
3). Fill in your map to help you get around Granite Point.
4). Use your notes from the introduction to help you through the program.

All groups will hand in the above items at the end of this unit.

*ASSIGNMENT :* While you and your partner are going through the program be thinking about the group Project Assignment that you want to do. All assignments for Snooper Troops due the last day of the class.

You may do any of the following :

1). A Snooper Troops board / card game
2). A short report or story
3). A short play
4). A diorama
5). A poster or drawing
6). A cartoon
7). A poem
8). A video
9). Illustrated story book

10). Quiz game
11). A combination of above activities
12). Some activity of your choice (check with teacher)

This assignment is worth the following points :

Notes, Map, Packet -------- 65 points
Project----------100 points

**TOTAL POINTS---------165**

**DUE DATE LAST DAY OF CLASS**

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